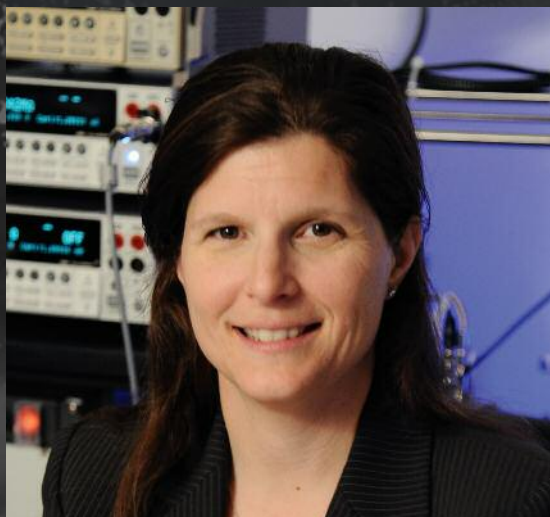


## DR. HEATHER WILLAUER

HOME STATE: Alabama



RESEARCH CHEMIST  
NAVAL RESEARCH LABORATORY (NRL)



*Did you know that carbon dioxide is 140 times more concentrated in seawater than it is in the air?"*

### Q: WHAT ARE THE BASICS ABOUT CONVERTING SEAWATER TO JET FUEL?

Seawater to jet fuel is the process of taking seawater (capturing the CO<sub>2</sub> and H<sub>2</sub> from the seawater) and converting it into the components of jet fuel (designer fuel). The challenge is that this technology has never been developed—we are the first to do it. We're still doing basic research to understand the chemistry and how to best develop the technology.

### Q: WHY DEVELOP THIS TECHNOLOGY?

The Navy is dependent on fuel. Everything that we utilize, every platform needs fuel. I would say that one of the biggest issues the Navy faces is getting the fuel to the location where the conflict is—often remote locations. Every three to five days, our ships have to stop working on the mission at hand, sail out to meet an oiler, transfer thousands of gallons of fuel, and then sail back to their operating areas. But what if you could make fuel when and where you needed it? If successfully developed, seawater to jet fuel has the potential to make a huge difference in our Sailors' lives. It will not only make their jobs easier and safer (refueling at sea is one of the Navy's more dangerous maneuvers), but will also allow them to focus on the mission at hand for longer periods of time. In the end, it will also help the Navy reduce its fuel dependency.

Dr. Heather Willauer (left) and her team, ENS Benjamin Poole and CDR Felice DiMascio.

The Electrolytic Cation Exchange Module (E-CEM) carbon capture skid.



### **Q: HOW DO YOU STAY MOTIVATED WHILE WORKING ON SUCH A CHALLENGING PROJECT?**

I have a great team. I am continually surrounded by good people. When one of us is down, the other one is up. The challenge ahead of us is really hard, but the science is also really exciting. We learn something new every day, realizing that this process, this technology, is actually possible. We are proving that it can be done and we're so excited about it. This research is not only good for the Navy, but for the world, too. And it's something we believe in.

### **Q: IF YOU COULD SHARE ANYTHING WITH THE DECKPLATE SAILORS, WHAT WOULD IT BE?**

Everything we do here at NRL is for our Sailors. They're the best! They put their families' lives on hold to go out there and serve us every single day. So we want to do something in return for them. We want our research to be effective, to make their jobs easier and safer. As scientists, we never know what they're going to encounter, what they're going to face so we want them to always be prepared. Having their perspective and knowing how to help them is something I highly value. I want them to know that we need their feedback. We want to know how best to help them. Many times we'll develop new technologies that break once out in the field—working in the laboratory sometimes creates a bit of a disconnect—we don't always have the best understanding of how our technology is really going to be used. So, feedback from the Sailors is critical to us. We want to get the product right.

### **Q: WHAT IS AN ENERGY WARRIOR?**

For me, being an Energy Warrior means being a good steward of the Earth—taking care of the planet we live on, using natural resources, and using what we have to give us energy. We have a significant amount of energy on this planet. The question is, how can we harness it cleanly and use it to our benefit? Instead of taking the easy way out and using fossil fuels, we need to go further and learn how to better harness that clean energy.

### **Q: WHAT IS YOUR FAVORITE SAYING?**

Well it's funny, because recently my husband came up with a mantra to live by: "Perspective is hard to gain, and difficult to maintain." Which means, sometimes we lose our sense of self, lose perspective on the important things in life. We often focus solely on the daily grind and lose sight of the big picture.